3.3 COST SCENARIOS BY ACTIVITY TYPE

1. This section presents several case studies of potential project redesign and changes which may be required by the Service as a result of consultations. These case studies are presented to exemplify possible impacts and are not meant to depict specific projections for the respective areas.

3.3.1 Housing and Commercial Development: Case Study of Development in Southern Texas

1. Predicting the nature of project modifications associated with commercial and residential development is highly speculative, due to the variability of individual projects, and the difficulty inherent in predicting future land use patterns. However, based on a review of the history of consultations that addressed development in this area and other regions under listing of the plover, the Service finds that adjustments to the scope or design of a typical development involve minor changes. The analysis presented here makes a conservative assumption that changes to the scope of a development project will reduce the number of housing lots developed by 1.0 to 2.5 percent from what would exist if these areas were fully developed. This number should be considered an upper bound of the economic impacts on development projects, as developments subject to modifications can often be redesigned in a manner that allows a developer to realize the full revenue potential of the project.[1]

1. Initially a discount rate of ten percent was used to calculate the net present value of housing over ten years. This rate reflects the best available estimate of the cost of capital financing to the private firms that would incur the majority of costs of project modifications affecting housing.[2] To address the uncertainty characterizing the actual cost of capital to private developers in Texas, this report also incorporates a sensitivity analysis using seven percent (High Net Present Value column) in Exhibit 3-3. The cost estimates also incorporate an annual housing value appreciation rate of ten percent.[3]

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[1] This number (1-2.5%) was arrived at in consultation with field biologists and a review of project modifications to housing development in various critical habitat areas around the country.

[2] This estimate of the private cost of capital reflects a weighted average of the cost to a private development firm of financing with debt versus financing with equity (i.e., the weighted average cost of capital). Assuming an equal weight between debt and equity financing, this equates to a nominal weighted average cost of capital of 12.2 percent. When this nominal rate is then adjusted for an annual inflation rate of 2.0 percent, this results in a real discount rate of approximately ten percent. Assuming a higher proportion of financing with debt (75 percent) than equity (25 percent), a weighted average cost of capital to developers would equal 7.3 percent. Because the financing needs and risk profiles of individual affected firms are likely to vary substantially, applying a range of discount rates (seven and ten percent) is appropriate for this analysis.

[3] Based on estimates from the Texas Association of Realtors: http://www.tar.org

Exhibit 3-3

POTENTIAL COST SCENARIOS ASSOCIATED WITH MODIFICATIONS OF HOUSING DEVELOPMENT IN SOUTHERN TEXAS , 2001-2010

Area	Median Home Price	Number of Projects Projected within Critical Habitat	Lots Not Developed Due to Modification	Reduced Profit per Home	Low Estimate of Net Present Value of Costs	High Estimate of Net Present Value of Costs
North Padre Island	$120,000	3,155 (approved in plan)	1% to 2.5 %	$12,000	$ 416,000	$ 1,183,000
South Padre Island	$120,000	500 condominiums	1% to 2.5 %	$12,000	$ 66,000	$ 187,000
Pointe San Luis	$200,000	5,144 (approved in plan)	1% to 2.5%	$20,000	$1,131,000	$ 3,214,000

Sources: (1) IEc analysis based on data from U.S. Fish and Wildlife Service.
Notes:
These estimates assume an average profit margin of ten percent on each project.
Based upon data from 1998, 1999 ad 2000, the annual appreciation rate for the value of a home was found to be approximately seven percent per year, which was rounded to ten percent for this analysis. Cost estimates were calculated using both seven percent (high value) and ten percent (low value) rates of discount.
For South Padre Island the Median Home Price was found by contacting the Cameron County Appraisal District. The data is from July 2000. North Padre Island is assumed to have the same median home value. For Pointe San Luis, the San Luis Development Corp. was contacted to determine the Median Home Price.

1. Several comments were received regarding development of South Padre Island, an important tourist destination attracting approximately 2.5 million visitors per year.[4] The estimates for South Padre Island in Exhibit 3-3, which may seem modest at first, are based on the best available information for planned housing development that would fall within critical habitat. Being a barrier island, South Padre Island has strict development regulations. Currently South Padre Island is very sparsely populated, with only 2,052 residents and 4,000 housing units.[5] Additionally South Padre has 5,500 rental units[6] which will significantly reduce the space available for new developments. Finally, there have been few new real estate developments on South Padre Island in recent years.[7]

1. Housing and commercial development constituted a major part of the economic analysis submitted by BNP Petroleum in their comments on the designation.[8] This analysis presented estimates of economic impacts for the Packery Channel and Shores Real Estate Development projects (described above) as well as the estimates for impact on oil exploration activity (described in section 3.3.5 of this report). This study employed methods from input-output analysis to highlight the impact on the regional economy as a result of reduced real estate development.

1. Input-output (I-O) models can be used to analyze the influence of a change in revenues for one sector of a regional economy (e.g., the construction industry) on the overall economic performance of that region. The cornerstone of an I-O model is a series of "multipliers" which quantify the interrelationships and transfers taking place between industries. For example, each dollar of revenue accruing to the construction sector circulates throughout the regional economy, in the form of construction workers' expenditures on food, housing, etc. By employing these multipliers, I-O models provide estimates of the total contribution of an individual industry to regional income, output, and employment. Therefore, while I-O models may be appropriate for small focused economies such as timber harvesting, they are less appropriate for diversified economic regions.[9] In addition, the multipliers used in I-O modeling do not necessarily imply

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[4] Holloway, Milton. *Economic Impact of the Designation of Critical Habitat for the Piping Plover in the Corpus Christi to South Padre Area*. Resource Economics Inc., Austin TX, January 2001.

[5] Lone Star International, 1998 estimates: http://www.lnstar.com/mall/txtrails/spi.htm

[6] South Padre Island Chamber of Commerce: http://sopadre.com/chamber.html

[7] Holloway, Milton January 2001.

[8] Holloway, Milton January 2001.

[9] I-O modeling may be appropriate for some situations involving critical habitat. For example, the Service utilized an I-O methodology for the economic impact study of the critical habitat designation for the northern spotted owl. In this instance, such modeling was appropriate, given the dominant role played by the affected industry in the regional economy

net cost outcomes. Rather, I-O models trace the distribution of money as it is extracted or injected into a region, and thus aggregate cost estimates based on multiplier output are inappropriate.[10]

1. Our analysis takes into account the direct impacts to the real estate developers that can be predicted with greater confidence than a resultant change in other sectors of the economy, given the relatively small level of impact on the primary development sector (housing). Furthermore, the project delay estimates which are used in the BNP study are not supported by estimates of historic consultations on commercial development involving the piping plover. Minor administrative time delays are factored into the cost estimates of 1-2.5% loss in profits to developers as presented in Exhibit 3-3. Overall, it is likely that any time requirements associated with consultation activity will be largely internalized within the larger process of getting other government permits and requisite documentation, as discussed in the baseline regulatory section.[11]

3.3.2 Dredging and Disposal: Case Studies of Corps Permitting

1. Dredging of deposited sediments along shorelines is needed in areas with waterway traffic and for beach stabilization. The dredging process itself can cause noise and disturbance along coastal areas that may disturb the plover. However, the most significant concern associated with dredging is the disposal of dredging spoils on beach areas that may provide critical habitat for the plover. Considerable consultation activity with the Corps pertaining to dredging projects has occurred and will continue in North Carolina, Mississippi, South Carolina and Florida. The cases contained in this section attempt to capture cost scenarios in various settings associated with dredging. As noted below, the Service does not believe that the estimated costs for these scenarios are likely to occur.

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[10] An independent review of economic assessment methodology for critical habitat designation, peer-reviewed by a panel of nine economists, chaired by Dr. Robert Mendelsohn of Yale University, concluded that "any attempts to derive long-run effects from an input-output model necessarily rests on some powerful assumptions that may contradict the theoretical foundation of the underlying model, itself. It is incumbent on the analyst to yield to define and justify any use of an input-output model to yield anything more than a description of the immediate effects." ECO Northwest. *A Method for Estimating the Economic Effects of Habitat Protection.* Portland OR: January, 1994. This report was prepared for the Portland Field Office, U.S. Fish and Wildlife Service .

[11] A recent study of the post-designation impact on housing development for pygmy owl critical habitat in Arizona (an area with rapid housing growth) revealed that the estimates of overall regional economic impact due to project modifications were not borne out. In fact, housing starts within areas designated as critical habitat for the owl actually increased, whereas the development industry had predicted that they would decrease. McKenney, Bruce (2000). *Economic Activity Following Critical Habitat Designation for the Cactus Ferruginous Pygmy Owl.* The Coalition for Sonoran Desert Protection.

St. Lucie Inlet, Martin County, FL (Unit FL-33)[12]

1. The St. Lucie Inlet is located between the southern most tip of Hutchinson Island and northern tip of Jupiter Island in Martin County, Florida. The St. Lucie inlet is one of six inlets into the Indian River Lagoon. The St. Lucie Inlet offers ocean access to the Intracoastal Waterway, the St. Lucie River and Okeechobee Waterway and is thus an important area for dredging activity by the Army Corps.[13]

1. According to the Corps, one outcome potentially resulting from consultations regarding the plover would be a requirement to dispose of sand in an offsite shallow water disposal area. The least cost alternative for disposal of this material would be within the St. Lucie Inlet State park, south of a the park jetty. An alternative site that might be used if there were concerns about use of this site would be a near-shore area located several miles south of the inlet. In this case, material would have to be barged to the new location. Cost estimates for such an operation are presented in Exhibit 3-4. In this case no additional environmental impact review would be needed since the site has already been permitted.

[12] Case details provided by the U.S. Army Corps of Engineers, Atlanta GA office, personal communication via email, March 20, 2001.

[13] Descriptive information on St. Lucie Inlet from the Florida Oceanographic Society: http://www.fosusa.org/environ/Inlet.htm, March 29, 2001.

Exhibit 3-4

COST ESTIMATE FOR SCENARIO INVOLVING CHANGES TO DREDGING ACTIVITY AT ST. LUCIE INLET

Past Dredging Activity (cubic yards)	Disposal Costs per cubic yard	Anticipated dredging in next five years	Cost for project under baseline conditions (beach disposal)	Cost with near-shore disposal	Additional cost incurred
1992: 163,000 1995: 351,000 2000: 239,000	Beach disposal: $6.84/cyd Near-shore disposal: $10.02/cyd	240,000 cyd (median of past 10 year dredging activity)	$1,641,600	$2,404,800	$763,200

1. The Service notes that sand dredged from St. Lucie Inlet is usually placed on or near the beach more than 8,000 feet south of the inlet, due to local longshore currents that would sweep sand placed farther north back into the inlet. This means that much of the sand placement may not even be within the critical habitat map unit. In addition, sand placed on these beaches is quickly reworked by wave action, and thus is unlikely to adversely modify critical habitat. The Service believes that additional requirements, of the type described above, are unlikely to result from critical habitat designation.

Murrells Inlet Navigation Project, South Carolina[14]

1. The Corps is currently planning to perform maintenance dredging of the Murrells Inlet navigation area in South Carolina for the second time since original construction (first maintenance work was completed in 1988). A sand spit on the southern tip of Garden City Beach has accreted/migrated into the previously constructed (and authorized) federal channel. The spit has forced the relocation of the navigation channel and the (US Coast Guard installed) aids to navigation markers. Continued channel migration will cause problems with safe navigation and foundation stability concerns for the south jetty.

[14] Case details provided by the U.S. Army Corps of Engineers, Atlanta GA office, personal communication via email, March 22, 2001.

1. There are three existing disposal areas/locations for the maintenance material dredged from the deposition basin and the federal channels. One disposal location is on Garden City beach (a developed beach), where the dredged material is used for storm protection. The second location for deposition of maintenance material is on Huntington Beach State Park (HBSP) at the tip of the south jetty, where dredged material is used to enhance/restore shorebird nesting habitat (previously created during original construction of the project). The third location is on the beach at HBSP. The boundaries for the proposed critical habitat encompass the very southern tip of Garden City beach (that includes the sand spit), the majority of the areas to be dredged and all of the disposal areas located on HBSP.

1. While the Corps suggests that consultations may also require channel realignment or relocation, the Service asserts that any requests for changes to ongoing dredging activity would be minimal. Therefore, this analysis assumes that the Service might only require disposal of material previously destined for HBSP at another location (that is not critical habitat) to minimize/avoid impacts to the habitat. Disposal alternatives are as follows:

   - Ocean disposal - Since there is no EPA approved ocean disposal area for this project and the material is good quality beach sand, this analysis did not assume that this alternative was feasible.

   - Confined disposal facility (CDF) - Since no CDF currently exists for the project, it would be costly to acquire the real estate and construct a CDF. It would also be very costly and difficult to acquire the necessary environmental compliance documentation to construct a new CDF.

   - Other beach disposal locations - There are two alternative beach disposal areas: one on Garden City beach and the other on HBSP, both outside of critical habitat.

1. If the Corps pumps the maintenance-dredged material to other beach disposal locations, the cost would increase accordingly. The Garden City beach scenario would entail pumping of all the material to Garden City beach, located upcoast of the jetties and outside of proposed critical habitat. The HBSP scenario would entail pumping some of the material further down-coast on HBSP to a location outside of the proposed critical habitat. The pumping distance on HBSP is longer than the pumping distance would be for Garden City beach. However, due to secondary effects which the jetty project may have on down-coast beaches, (HBSP) the Corps believes that the HBSP scenario is more plausible.

1. By pumping the material further downcoast on HBSP, costs will increase per cubic yard of material due to increased pumping distances. This will also create additional costs for mobilization/demobilization (mob/demob) of equipment, additional real estate actions, and additional environmental coordination/documentation.

1. Based on cost estimates similar to those used for the St. Lucie Inlet case, the Corps

estimates that it would cost approximately $630,000 more to pump further down-coast on HBSP. This $630,000 costs includes additional mobilization and demobilization costs. Additional environmental coordination/documentation would be approximately $10,000, for a total increase of approximately $640,000. The increased costs for the longer pumping distances would potentially increase for each maintenance dredging cycle.

1. The Service believes that it is unlikely that the designation of critical habitat would significantly modify the disposal of material at the Murrells Inlet Navigation Project. Recently, the Service recommended that the Corps modify its plans and place material on a designated bird-nesting habitat that is within the proposed critical habitat. The placement of this dredged material is necessary to set back plant succession and restore suitable nesting for terns, Wilsons plovers, and other shorebirds. Service biologists recommend continuing to place material in this area during future maintenance dredging because it enhances shorebird nesting and has no impact on piping plover wintering habitat. The Service is also planning to support placement of material on the Huntington Beach State Park front beach in the proposed critical habitat. This action will be recommended in order to create habitat for the threatened seabeach amaranth.[15]

1. Even if, for some unforeseen reason, material could not be placed on Huntington Beach State Park within the critical habitat, the material could be placed on Garden City front beach with little or no additional cost. This project was last maintained 13 years ago and future maintenance would likely be every 10-15 years. Therefore any additional costs, although not likely, might occur only at this interval, not on an annual basis.

Southern Texas Dredging

1. Several comments received from Southern Texas expressed concerns about the impact of critical habitat on dredging activity. Except for the Gulf Intracoastal Waterway (GIWW), dredging projects in Southern Texas are relatively limited. Comments received from the Gulf Intracoastal Canal Association (GICA) cited a case from 1990 in which the director of GICA was awarded a contract from the Corps of Engineers for dredging of Corpus Christi Bay to mudflats in Nueces, Kleberg and Kennedy counties, Texas.[16] The comments state that the contract was terminated in March of 1991 by order of the Service because of the presence of piping plovers. The respondent claims that the company suffered an economic loss of $200,000 as a result of this permit termination. Review of this case file by the Service reveals that the project involved the construction of a ring levee around an old dredge material placement site at an area near the John F. Kennedy Causeway. As the project proceeded, some adjacent private property owners sited 50 piping plovers near the site and contacted the Service, leading to the project being halted. The Service has stated that such an incident would be highly unlikely under critical habitat designation,

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[15] Personal communication, U.S. Fish and Wildlife Service, staff biologist, Huntington Beach field office, April 22, 2001.

[16] Contract No. DACW64-91-C-0011 of the Army Corps of Engineers.

since prior consultation with the Service (probably at an informal level) would have led to minor changes in the timing and design of the project and precluded any cessation of construction activity. Furthermore, there is a Memorandum of Understanding between the Corps, the Service and the GICA that regulates where disposal will be placed. Only informal consultations would thus be required in some cases where there is a possibility for placement of material on grass beds, or islands that were occupied by nesting birds.

Other Dredging Projects along the Gulf Coast

1. The U.S. Army Corps of Engineers, Mobile AL office submitted comments pertaining to ongoing dredging projects which may be affected by the designation (Exhibit 3-5). The Service believes that programmatic or informal consultations can resolve most of the concerns related to these projects.

Exhibit 3-5

CORPS PROJECTS ALONG GULF COAST WITHIN CRITICAL HABITAT DESIGNATION

Project Source	Project location	Activity
Federal	Baldwin County, Alabama	Shoreline Study
	Biloxi Harbor, Mississippi	Deer Island Marsh Creation
	Fort Gaines Channel, Alabama	Dredging/Maintenance
	Mobile Harbor, Alabama	Dredging/Maintenance
	Panama City East Pass, Florida	Section 206 Aquatic Ecosystem Restoration
	Panama City Harbor, Florida	Dredging/ Maintenance
	St. Andrews Inlet, Florida	Section 1135 Project Modifications
Private	Harrison/Hancock Beach, Mississippi	Beach Nourishment
	Pass Christian Beach, Mississippi	Beach Nourishment
	Round Island, Mississippi	Lighthouse Restoration
	Ship Island, Mississippi	Beach Nourishment (with NPS)

Source: Personal communication with U.S. Army Corps of Engineers, Mobile, AL District Office, April 9, 2001

1. Overall, dredging activities may be affected as a result of critical habitat designation. However, the Service believes that many of these impacts are in fact attributable to the listing, and/or will be addressed through ongoing programmatic consultations. The Service is actively engaged with the Corps in conservation activities on various species and does not anticipate that impacts presented in the aforementioned case studies will be realized.

3.3.3 Beach Nourishment Activities: Case Study from Savannah District

1. Eroded beaches along the Atlantic and Gulf coasts require frequent beach nourishment to prevent storm damage to coastal communities and to promote recreation. Such beach nourishment activities are usually carried out in conjunction with waterway dredging activities, which provide a source of beach sand for nourishment projects. However, beach nourishment often needs to be carried out with greater care than conventional dredge disposal to account for the needs of coastal communities. The Service believes that consultations will not prevent such activities from taking place but would rather cause a shift in the timing of activities to allow for biologically conducive

usage of habitat by plovers during the wintering season. Such changes in timing would likely be required in the absence of critical habitat (i.e., under the listing). Projected costs associated with beach damage and disaster relief are thus not likely to be realized. In rare cases, consultations on beach nourishment may lead to changes in the pumping distance for nourishment projects to prevent disturbance to habitat. The following case scenario from the Savannah District in Georgia illustrates what might happen in the event that the Service requires changes in beach nourishment activity in this area.

Tybee Island Restoration Project[17]

1. Tybee Island is a barrier island at the mouth of the Savannah River and forms part of the south channel bank of a deep draft navigation project. Periodic nourishment of the beach is part of the Tybee Island hurricane protection project and covers the oceanfront and southern portions of the island. Currently, the northern portion of the island, not in the authorized project limit, is experiencing erosion. Georgia's Congressional delegation is considering a resolution for the Corps of Engineers to analyze the erosion problem and consider including the north beach area into the existing project.

1. Additional dredging costs for normal operation and maintenance of bar channel dredging could be incurred if a portion of the disposal sites must be moved. The Savannah District has approval for use of a hydraulic dredge to place dredged material offshore of Tybee Island and adjacent to the harbor bar channel in submerged berms and a larger feeder berm. Use of this area is anticipated to begin in fiscal year 2002 after completion of cultural and benthic analyses. The current ocean disposal practice from the bar channel can only occur between December 15 and March 15, due to a sea turtle protection window. Switching to hydraulic dredging would allow removal of critical shoals anytime of year instead of the three-month interval.

1. The submerged berms[18] would be 2,000 feet south of the channel and spaced 2,000 feet apart. Based on the placement sites in the draft entrance channel report, the average pumping distance for each segment of the bar channel is about 5,000 feet. Moving the nearest submerged berm a mile would require adding a booster pump, since the minimum distance would be 10,000 feet. Each booster pump increases the pumping cost about 1.5 times. By this measure, costs for dredging Station 0+000 to -10+000B could increase from $324,000 to $486,000, or $162,000 annually.

1. Moving the feeder berm an additional mile would increase pumping costs and involve

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[17] Case details provided by the U.S. Army Corps of Engineers, Atlanta GA office, personal communication via email, March 20, 2001.

[18] A mound or bank of earth placed in beach nourishment projects to provide fortification. Natural berms may also be formed by wave action along the back-shore of a beach.

more material since it would likely accommodate 80 percent of the annual dredged material from the bar channel. To exemplify the cost of such an operation, we may consider the cost of moving material from beach locations to a modified feeder berm. Such a project is estimated to cost $2,104,000 under baseline conditions, and increase to $3,156,000 for modified berm disposal, amounting to an annual increase of $1,052,000 for the increased pumping distance.

1. Overall, the Service expects that beach nourishment activities will not be affected by the critical habitat designation. In most cases, only minor time delays in nourishment projects are needed and such timing changes have been required during consultations since the species was listed. In the aforementioned case study, the Service believes that a more likely scenario would require no project modification since the submerged berms would be underwater and therefore would not contain the constituent elements needed by wintering piping plovers. The Service would thus not request movement of the feeder berm an additional mile from the beach.

3.3.4 Tourism and Recreation

1. The Service does not anticipate any severe restrictions on shoreline activity as a result of critical habitat designation. Increased conservation efforts leading to larger plover population may in fact benefit recreational visitation to such areas. There may be some increased consultation activity for certain parts of North Carolina and Florida pertaining to tourism and recreational activities, but these costs have been internalized within the analysis presented in Exhibit 3-2. Since the piping plover was listed in 1985, no beach closures have occurred due to the presence of piping plovers in their wintering range, although in the breeding range partial beach closures have occurred to protect chicks and adult plovers prior to the chicks fledging. The Service believes that normal human presence on piping plovers in their wintering habitat does not have serious consequences at the population level, and thus does not expect the designation of critical habitat to affect recreational beach use.

1. A 1998 study of the effects of recovery efforts for the Atlantic population of piping plover found that impacts on recreational activities as a result of recovery efforts for the piping plover depend on five factors: the extent of limitations imposed by the facility (usually beach management offices), the availability of substitutes within the local economic region, the popularity of the beach environment, the size and growth of the local economy, and local businesses' ability to adapt to changes in demand. The study found that regional effects of recovery efforts varied from negligible to economically significant, but that the most important controlling factor was the extent of limitations imposed. Limitations observed in the study varied from restricting access to dune areas and bayside flats to total beach closures. In three of four case studies of areas that restricted but did not prohibit access to beach habitats, no discernable reduction in beach visitation was observed.[19] It is important to note that beach

[19] Unsworth et al. *An Economic Analysis of Piping Plover Recovery Activities on the Atlantic Coast*. Prepared for the U.S. Fish and Wildlife Service, Division of Economics, Arlington, VA, 1998.

closures have never occurred due to conservation measures for the plover's wintering habitat since the species was listed as threatened. The Service does not anticipate any change in conservation measures in this regard.

3.3.5 Oil and Gas Exploration

1. Several commenters expressed concerns about the impact of critical habitat designation on the oil and gas industry that is expected to show renewed growth in the coming decade. BNP Petroleum submitted a detailed economic analysis in which one of the scenarios focused on oil and gas production prospects in the Laguna Madre environs in Southern Texas.

1. BNP estimates the natural gas reserves from its South Padre Island projects to be approximately 1.7 trillion cubic feet.[20] At the market price of about $4.00 per mcf, this reserve is worth about $6.8 billion. The BNP study goes on to estimate economic impacts to producers, the region, consumers, and government entities. The most significant of these are impacts associated with oil and gas development activities. The BNP sponsored analysis is premised on several assertions. The first of these is that much of the proposed designation in Texas is unoccupied, and thus any future consultations and required modifications would be the result of the designation. The Service has questioned this assertion. The second is that all oil and gas development on Laguna Madre will be delayed from six months to two years as a result of critical habitat. No evidence is presented to support this assertion.

1. It is important to note that no oil exploration activity has been delayed by any consultations pertaining to the piping plover since the species was listed as threatened in 1988. Although the permitting process for oil and gas exploration and production activities is complex and involves a myriad of Federal, State and local requirements, by law, a formal consultation must be completed within 165 days. In addition, even assuming the designation leads to additional consultations, it is unclear as to why activities forecast to occur a number of years after the designation would experience delays. That is, for activities expected three to five years out or more, any required consultation could be undertaken in the near term, as part of any normal project planning and permitting. Considering the extraordinary expected revenue streams forecast to result from development of this well field (i.e., in excess of $1 billion), it would appear that the developers of these well fields will have sufficient incentives to complete all required permitting activities in a timely manner. An informal consultation has already been conducted with regard to the Western Geo-physical seismic surveys in the Laguna Madre and adjacent areas and minor mitigation measures were carried out to reduce impact to mudflats.

1. As noted above, the BNP analysis projects future natural gas production for Laguna Madre, and then estimates the cost of six month to two-year delays in the assumed

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[20] Based on 3-D Seismic Imaging Technology.

development. In addition to potentially overstating the likelihood of possible project delays, especially in the long term, the estimates presented are based on a number of assumptions that likely overstate potential impacts. For example, the analysis appears to assume constant product prices. Even assuming that the projected delays are realized, under conditions of rising natural gas prices, a delay might in fact benefit producers, the regional economy, and consumers. The analysis also appears to assume that all of these activities take place within critical habitat, and thus will be affected by critical habitat. Overall, while the author of the BNP study characterizes the estimated impacts presented in that report as "certainly conservative [i.e., low]," the estimates presented appear to be seriously overstated (i.e., by orders of magnitude).

1. Oil and gas production projects in the Laguna Madre as well as on upland areas are not likely to result in further consultations since the installation of gathering equipment is performed underground, and transport of materials are made through an extensive system of transfer facilities from the operator to the refinery. Furthermore, directional drilling technology and currently-used Clean Water Act permitting procedures (part of the baseline) have greatly reduced the need for oil and gas drilling facilities to be situated on Texas beaches or tidal passes. If there are changes in the scope of work above and beyond these contingencies, the action agency (FERC) or their representative would reinitiate informal consultations, with a decision coming within thirty days.[21]

3.3.6 Waterway Operations

1. The Texas Waterway Operators Association have also expressed concerns that a change in timing of dredging activity would affect their business and lead to a shift of cargo movement from barges to trucks. The waterway operators claim that such a shift would also have serious environmental consequences since freight movement by barge results in 95 percent less emissions of nitrogen oxides. Furthermore, the commenters cite a study conducted by the Tennessee Valley Authority which estimated cost savings of over $1.9 billion to shippers and consumers in 1997 due to the usage of barge traffic versus road transport in Texas.[22] The Service asserts that critical habitat designation will not disrupt waterway traffic in any way, since the existing baseline rules on waterway traffic associated with speed, contaminants and safety would be sufficient to address any concerns pertaining to the plover. Consultations involving dredging would be undertaken to ensure that waterway traffic is not disrupted.

3.4 ADDITIONAL IMPACTS DUE TO CRITICAL HABITAT

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[21] Personal communication, wildlife biologist, U.S. Fish and Wildlife Service, Clear Lake TX, field office.

[22] Tennessee Valley Authority, Navigation Program, web site: http://www.tva.gov/river/navigation/economic.htm

3.4.1 Potential Impacts on Small Businesses

1. Under the Regulatory Flexibility Act (as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996) whenever a Federal agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions).[23] However, no regulatory flexibility analysis is required if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities. This section addresses the potential impacts to small entities and communities located within the proposed critical habitat designation.

1. This rule is not expected to have a significant economic impact on a substantial number of small entities because it imposes very little, if any, additional impacts on land use activities beyond those that may be required as a result of the listing of the piping plover. Because the piping plover is a Federally protected species, landowners prohibited from taking the species, which is defined under the ESA to include such activities that would harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. As a result, any future consultations with The Service are likely to occur to avoid any such activities that would result in an incidental take of the piping plover. Therefore, proposed modifications to such activities recommended by The Service would be attributable to the presence of the piping plover on a landowner's property and not due to the presence of critical habitat.

1. In addition, the cost estimates per consultation are largely borne by the Federal agency involved in the consultation (Exhibit 3-2). The only project modifications which have a likelihood of affecting small businesses pertain to housing and commercial development. Here too, the substitutability of land for development precludes any significant impact which some commenters have predicted.[24]

1. Dredging contractors for the Corps, who may be small businesses in certain areas, are unlikely to be affected by critical habitat designation, since none of the project modifications would involve a cessation of dredging activity. Rather, such contractors may in fact benefit from the critical habitat designation, under a scenario in which the Corps may require more hours of their labor in

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[23] 5 U.S.C. 601 et seq.

[24] The Office of Advocacy of the Small Business Administration has expressed such concerns in a recent letter to the Director of the Service (dated September, 28, 2000). http://www.sba.gov/advo/laws/comments/doi00_0928.html

moving dredge spoils and related activities.

1. Recreational businesses in North Carolina voiced concerns about the impact of beach closures on their businesses. As noted in Section 3.3.4, no beach closures have occurred since the listing of the plover and none are expected to occur since ongoing recreational beach activity, within the bounds of baseline regulations, has limited impact on plover habitat. Hence, this class of businesses is unlikely to be impacted by critical habitat designation.

1. Among the public comments received for the plover from development interests, only Pointe San Luis of Galveston Island, Texas, identified themselves as a small business. Under a worst case scenario for impact on this particular development of $3.2 million (over ten years), the impact would still be less than 1% of the revenues generated by the venture of over $370 million.[25] As this example shows, the impact on small businesses is likely to be minimal under worst case scenarios and hence a more detailed regulatory impact analysis is not necessary for the Director to certify compliance with the SBREFA.

3.4.2 Environmental Justice Concerns

1. Executive Order 12898 states that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

1. To determine whether the designation of critical habitat imposes a disproportionate burden on minority or low income populations, three aspects need to be considered: (1) the methodology used to designate critical habitat, (2) the demographics of the counties containing designated land and (3) the costs incurred due to the designation.

1. According to the ESA, the land designated as critical habitat must contain "those physical or biological features essential to the conservation of the species and which may require special management considerations or protection; and [may include] specific areas outside the geographical area occupied by the species at the time it is listed."[26] The designation is based solely on the biology and the physical characteristics of the land and does not take into account demographic characteristics.

1. The land designated as critical habitat constitutes 57 counties in eight states.

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[25] Pointe San Luis, comment letter on critical habitat designation for the piping plover, wintering habitat, November 21, 2000.

[26] U.S. Endangered Species Act, 1973. Section 1.

Comparing the demographics of the state as a whole to the counties containing designated land can be used to determine whether the designation is disproportionately affecting minority and low income populations. The two comparative statistics used are the percent minority and the percent of persons below the poverty level.[27] Exhibit 3-6 lists the 21 counties that had either a higher minority population or more persons living below the poverty level than the state average.[28] Less than half of the counties containing land designated critical habitat have larger minority or low income populations relative to the state totals.

Exhibit 3-6
LIST OF COUNTIES WITH MINORITY POPULATION AND / OR POVERTY LEVEL GREATER THAN THE STATE AVERAGE

State	County	Minority (%)	Below Poverty Level (%)
Texas	**State Average**	**45.9**	**16.7**
	Aransas	32.2	22.7
	Calhoun	49.4	18.1
	San Patricio	60.5	23.1
	Nueces	65.8	21.5
	Kleberg	73.3	25.5
	Kennedy	81.7	20.1
	Cameron	86.6	35.3
	Willacy	88.1	39.7
North Carolina	**State Average**	**27**	**12.6**
	Onslow	33.4	14.6
	Pender	34.4	15
	Hyde	38.5	24.8

[27]The source of the data is http://www.fedstats.gov/. The percent minority is treated here as the sum of the percent Black population, percent Asian or Pacific Islander population, percent American Indian, Eskimo and Aleut population and percent Hispanic population.

[28] Counties within three percentage points of the state average, for both parameters are not listed because they are statistically insignificant.

South Carolina	**State Average**	**32.3**	**13.9**
	Charleston	39.3	16.8
	Georgetown	43.8	18.6
	Colleton	47	22.6
Georgia	**State Average**	**34.1**	**14.7**
	Chatham	47.8	19
	McIntosh	50.8	22.2
	Liberty	57.7	18.8
Florida	**State Average**	**33.1**	**14.4**
	Franklin	18.1	19
	Taylor	27.5	22
	Gulf	28.6	19.8
Alabama	**State Average**	**28**	**16.2**
	Mobile	36	20.1
Source: http://www.fedstats.gov All data is from 1997			

3.5 POTENTIAL BENEFITS OF PROPOSED CRITICAL HABITAT

1. To determine the incremental benefits of the critical habitat designation, this report aims to consider those categories of benefit that will be enhanced as a result of the proposed critical habitat designation.

1. The primary goal of listing a species as endangered or threatened is to preserve the species from extinction. However, various economic benefits, measured in terms of regional economic performance and enhanced national social welfare, result from species preservation as well. Regional economic benefits can be expressed in terms of jobs created, regional sector revenues, and overall economic activity. For example, the presence of a species may result in a successful local eco-tourism operation. National social welfare values reflect both use and non-use (i.e., existence) values, and can reflect various categories of value. For example, use values might include the opportunity to see a plover, or the recreational use of habitat area preserved as a result of the plover. Existence values are not derived from direct use of the species, but instead reflect the satisfaction and utility people derive from the knowledge that a species exists.

1. The following examples represent potential benefits derived from the listing of the plover and, potentially, critical habitat:

- **Ecosystem health**. Plovers are part of a natural functioning wetlands ecosystem. In the absence of plovers in the ecosystem, other natural organisms may suffer. Actions to protect the plover may benefit other organisms. These organisms may provide some level of direct or indirect benefit to people.

- **Real estate value effects**. Real estate values may be enhanced by critical habitat designation. For example, such enhancement may occur if open space is preserved or if allowable densities are reduced or kept at current levels as a result of critical habitat designation.

- **Flood control**. Preserving natural environments can also reduce FEMA and county expenditure on bank stabilization and other flood control programs.

1. Designation of critical habitat may provide all of these benefits, but only to the extent that critical habitat is expected to result in additional consultations and project modifications, above those required due to listing. However, it is difficult at this time to estimate the total benefit afforded by critical habitat, since too little is known about (1) the likely benefits of each consultation and modification, and (2) the extent to which such modifications would result from critical habitat.